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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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10/586,361

07/18/2006

David Ezra

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EXAMINER

PRITCHETT, JOSHUA L

ART UNIT

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**Please find below and/or attached an Office communication concerning this application or proceeding.**

The time period for reply, if any, is set in the attached communication.

<b>Office Action Summary</b>	<b>Application No.</b> 10/586,361	<b>Applicant(s)</b> EZRA, DAVID	
	<b>Examiner</b> JOSHUA L. PRITCHETT	<b>Art Unit</b> 2872	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

#### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

#### Status

- 1) ☒ Responsive to communication(s) filed on 06 April 2009.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

#### Disposition of Claims

- 4) ☒ Claim(s) 1-34 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-34 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

#### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 18 July 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

#### Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All    b) ☐ Some \*    c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

#### Attachment(s)

- |  |   |
|--|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892)                                | 4) <input type="checkbox"/> Interview Summary (PTO-413)<br>Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)                       | 5) <input type="checkbox"/> Notice of Informal Patent Application                       |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)<br>Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____  |

## **DETAILED ACTION**

This action is in response to Amendment filed April 6, 2009. Applicant amended claims 1, 17, 21 and 22.

### ***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1, 2, 5, 8, 10, 12, 13, 15-22, 24, 33 and 34 are rejected under 35 U.S.C. 102(b) as being anticipated by Ishihara (US 2001/0050815).

Regarding claims 1 and 21, Ishihara discloses an encoding surface (32a) having a micro-relief pattern having a predetermined spatial distribution thereby (Fig. 1) to produce a predetermined diffracted first image when illuminated in use (Figs. 10 and 11), and an optically anisotropic layer (33) of liquid crystal material located over the encoding surface (Fig. 1) and having an orientation with the optical axis lying substantially parallel to the encoding surface (para. 0087) wherein at least part of the micro-relief pattern induces local orientation of the optical axis of the optically anisotropic layer to align the local optical axis at respective orientations corresponding to the predetermined spatial distribution of the micro-relief pattern

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(para. 0087) to impose a predetermined spatial distribution polarization modulation and wherein the orientations of the optical axis of the optical anisotropic layer are fixed (para. 0087) to produce a predetermined polarized second image when illuminated in use so that both a diffracted image and a polarized image are viewable in which both the diffracted image and the polarized image vary spatially across at least part of the overall image (para. 0005 and 0090).

Regarding claims 2 and 22, Ishihara discloses the micro-relief pattern is provided on a layer in contact with the optically anisotropic layer thereby to define the encoding surface (Fig. 1).

Regarding claim 5, Ishihara discloses the encoding surface includes a plurality of area each of which having a respective orientation of the micro-relief pattern thereon defining respective optical axes of the optically anisotropic layer (Fig. 1; para. 0087).

Regarding claim 8, Ishihara discloses the average thickness of the optically anisotropic layer and its birefringence varies with position across the device to vary the optical retardation induced thereby (Fig. 1; thickness varies).

Regarding claim 10, Ishihara discloses the thickness of the optically anisotropic layer disregarding the micro-relief pattern is generally continuously contoured (Fig. 1).

Regarding claim 12, Ishihara discloses the encoding surface is reflective over at least part of the device whereby at least part of the device is adapted to operate in reflection mode (abstract).

Regarding claim 13, Ishihara discloses at least part of the surface of the optically anisotropic layer remote from the encoding surface is at least partially reflective (para. 0087; refractive index difference creates some reflection).

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Regarding claim 15, Ishihara discloses use in transmission mode (abstract).

Regarding claim 16, Ishihara discloses us in reflection mode (abstract).

Regarding claim 17, Ishihara discloses the optically anisotropic layer comprises a polymerisable liquid crystalline material fixed to a single substrate, and the polarized image is obtained through local polarization modulations on the single substrate, the anisotropic layer remaining always anisotropic (para. 0117; MPEP 2114).

Regarding claim 18, Ishihara discloses the optically anisotropic layer comprising a polymer liquid crystal material (para. 0117).

Regarding claim 19, Ishihara discloses the orientation of the optically anisotropic layer is permanently preserved by a fixing process (para. 0087).

Regarding claim 20, Ishihara discloses the refractive index of the micro-relief layer is substantially equal to the ordinary or extraordinary refractive index of the optically anisotropic layer (Figs. 11-13).

Regarding claim 24, Ishihara discloses the micro-relief pattern is formed by UV curing of a suitable material in contact with a master (para. 0118).

Regarding claims 33 and 34, Ishihara discloses the liquid crystal material has a planar orientation with the optical axis lying substantially parallel to the encoding surface and the optical axis following directions of the predetermined distribution of the micro-relief pattern (para. 0087)

***Claim Rejections - 35 USC § 103***

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The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3, 4, 14 and 25-32 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishihara (US 2001/0050815) in view of Suzushi (US 2002/0110651).

Regarding claim 3, Ishihara teaches the invention as claimed but lacks reference to forming the encoding surface on the anisotropic layer. Suzushi teaches the encoding surface is formed on the optically anisotropic layer (para. 0053). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the Ishihara invention include the location of the encoding surface for the purpose of allowing the device to adjust the diffractive performance and the polarization performance of the incident light at the same point.

Regarding claim 4, Ishihara teaches the invention as claimed but lacks reference to forming multiple regions. Suzushi teaches the encoding surface includes one or more regions having a significant diffractive effect and one or more relatively weakly diffractive regions where there is little or not diffractive effect (para. 0026). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the Ishihara invention include the multiple regions for the purpose of affecting different incident light in different manners.

Regarding claim 14, Ishihara teaches the invention as claimed but lacks reference to a reflective substrate. Suzushi teaches the micro-relief layer comprises a transmissive substrate

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and at least part of the surface thereof remote from the interface with the optically anisotropic layer is reflective (para. 0009, 0025). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the Ishihara invention include the reflective substrate of Suzushi for the purpose of creating an image on the same side of the device as the light source.

Regarding claims 25-32, Ishihara teaches the invention as claimed but lacks reference to the claimed systems. Suzushi teaches the use of the micro-relief pattern on various devices including optical security devices (para. 0075). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the Ishihara invention include optical device in the system of Suzushi for the purpose of authenticating important documents.

Claims 6 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ishihara (US 2001/0050815) in view of Nikolov (US 2004/0095637).

Ishihara teaches the invention as claimed but lacks reference to the thickness providing phase retardation. Nikolov teaches at least part of the optically anisotropic layer is selected having regard to the frequency of the intended illumination in use to provide phase retardation when appropriately viewed (para. 0062). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the Ishihara invention include the phase retardation of Nikolov for the purpose of differentiating the propagation of light based on polarization and/or wavelength to create a different image depending on the polarization or wavelength of incident light.

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Claim 9 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishihara (2001/0050815) in view of Admitted Prior Art.

Ishihara teaches the invention as claimed but lacks reference to the step distance greater than the pitch dimension. Admitted Prior Art teaches the encoding surface is stepped, whereby the thickness of the optically anisotropic layer is stepped by a step distance which is substantially greater than the structure pitch dimension thereby to provide regions of respective selective retardations (current specification para. 0033). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the Ishihara invention include the step distance as taught by the Admitted Prior Art for the purpose of providing polarization selectively to the encoding surface.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishihara (US 2001/0050815).

Ishihara teaches the invention as claimed lacks reference to linear varying. It is extremely well known in the art to have a linearly varying anisotropic material over the surface of a diffraction pattern. Official Notice is taken. It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the Ishihara invention include the linearly varying anisotropic material as is known in the art for the purpose of matching a linearly shaped surface pattern.

Claim 23 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ishihara (US 2001/0050815) in view of Knop (US 4,251,137).



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Ishihara teaches the invention as claimed but lacks reference to embossing. Knop discloses the micro-relief pattern is formed by embossing (col. 1 lines 45-50). It would have been obvious to one of ordinary skill in the art at the time the invention was made to have the Ishihara invention include formation by embossing as taught by Knop for the purpose of forming a device from a master copy accurately and precisely.

### ***Response to Arguments***

Applicant's arguments, see Amendment, filed April 6, 2009, with respect to the rejection(s) of claim(s) 1 and 21 under Knop have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made in view of Ishihara. Applicant amended the claim language to overcome the Knop reference. The Ishihara reference was added to teach the newly claimed combination.

### ***Conclusion***

Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

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MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to JOSHUA L. PRITCHETT whose telephone number is (571)272-2318. The examiner can normally be reached on Monday - Friday 7:00 - 3:30.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Stephone B. Allen can be reached on 571-272-2434. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Joshua L Pritchett/

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Primary Examiner  
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